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EXAMINER	
PATEL, GAUTAM	
ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/505,470	SONG, TAE-SUN	
	Examiner	Art Unit	
	Gautam R. Patel	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/13/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment/Arguments

1. This is in response to amendment filed on 2/4/08.

2. Claims 1-13 remain for examination.

3. Applicant's arguments regarding rejection of claim 3 under 35 U.S.C. § 112 second paragraph have been fully considered and rejection of claim 3 under 35 U.S.C. 112 second paragraph [old rejection] has been **withdrawn**. Please see new 112 first and second below.

Drawings/Objection

4. The drawings are objected for following reasons:

The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "air gap control unit, independent from focus control unit" must be shown or the features cancelled from the claims. Since this a NEW MATTER it should be removed from claims and NOT added to drawings.

No new matter should be entered.

Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects must consist of following:

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments, or remarks, section of the amendment, and may be ***accompanied by a marked-up copy of one or more of the figures being amended, with annotations***. Any replacement drawing sheet ***must be identified in the top margin as "Replacement Sheet"*** and include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended. ***Any marked-up (annotated) copy showing changes must be labeled "Annotated Marked-up Drawings" and accompany the replacement sheet in the amendment (e.g., as an appendix).***

a proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. Correction may not be held in abeyance.

Corrections are required.

OBJECTION TO NEW MATTER ADDED TO SPECIFICATION

5. The amendment filed on 2/4/08 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "an air gap control unit for maintaining distance between the solid immersion lens and the optical recording medium, **independent from the focus control signal generated from the focus control unit**". An independent or otherwise there is NO separate control unit for maintaining the air gap disclosed in the original specification.

Applicant is required to **cancel** the new matter in the reply to this Office Action.

Claim Rejections - 35 U.S.C. § 112

6. The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Page 2, simply states that "air gap must be properly maintained, and focus controls are not accomplished by an adjustment of position of a SIL in near-field recording". The specification does not disclose at all "the concept of an independent unit controlling the SIL and especially independent from the focus control signal".

7. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 & 7, the scope of "air gap **control unit**" lacks proper antecedent basis.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi et al., US. Patent 6,353,582 (hereafter Kikuchi) in view of Corle et al., US Patent 5,125,750 (hereafter Corle).

As to claim 1, Kikuchi discloses the invention as claimed [see Figs. 1, 9 & 11] including a light source, a collimator lens, a beam-splitter, an objective lens system, a light-receiving module, a focus control unit and a position adjustment unit, comprising:

a light source [fig. 9, unit 51] generating and emitting light beams;

a collimator lens [fig. 9, unit 52] collimating the emitted light beams from the light source into collimated beams;

a beam-splitter [fig. 9, unit 53] enabling a part of the collimated beams to pass there through;

an objective lens system [units 56, 59, 55 and 54], placed on an optical path between the beam-splitter and the optical recording medium, focusing the collimated beams from the beam-splitter,

a light-receiving module [fig. 9, unit 60] receiving the light beam reflected from the optical recording medium and converting it into electrical signals;

a focus control unit [fig. 12, focus servo system] generating a focus control signal for focus control, in response to the electric signal from the light-receiving module; and

a position adjustment unit [fig. 1, unit 40 or fig. 12, unit 67], connected to the light source or the collimated lens, making the light source or the collimated lens shift in response to the

focus control signal generated from the focus control unit [col. 2, line 61 to col. 3, line 13; col. 5, lines 14-48; col. 6, line 60 to col. 7, line 8 and figs. 1, 9 and 12].

Kikuchi discloses all of the above elements, including an objective lens assembly and a condenser lens.

Kikuchi does not specifically disclose the objective lens system comprising:

a solid immersion lens and details [such as air gap control and a coupling lens for distributing power] that is normally associated with a near-field assembly.

However, use of near-field assembly is well known in the art for a while now. Also more importantly Corle clearly discloses:

an objective lens system [fig. 4, units 23 and 26] that has a solid immersion lens [fig. 1, unit 26], and details that is normally associated with a near-field assembly, and the substrate [protective coating] [col. 4, lines 1-12] being interposed between the planer surface of the solid immersion lens and the signal recording surface; and

an air gap control unit [fig. 3 "a servo system"] for maintaining a distance between the solid immersion lens and the optical recording medium, independent from the focus control signal generated from the focus control unit [col. 2, line 46 to col. 3, line 66].

Both Kikuchi and Corle are interested in improving the light converging system in an optical disk device. Both show objective lens assembly.

One of ordinary skill in the art at the time of invention would have realized that system of Kikuchi could be easily improved for high density recording.

Therefore, it would have been obvious to have used a near-field lens and associated details in the system of Kikuchi as taught by Corle because one would be motivated to reduce the spot diameter and thus increase recording density in the system of Kikuchi and also provide higher NA without using expensive objective lens [col. 2, lines 3-7; Corle].

9. The aforementioned claim 2, recites the following elements, inter alia, disclosed in Kikuchi:

the objective lens system further comprises a condenser objective lens [fig. 9, unit 59].

10. The aforementioned claim 3, recites the following elements, inter alia, disclosed in Kikuchi:

the distance between the collimated lens and the light source is changed by an amount of about L satisfying the following:

$L = (f1/f2)^2 \times (\Delta d/n)$ where Δd represents the deviation in the optical thickness of the substrate of the optical recording medium; n represents a refractive index of the substrate; and f1 and f2 represent focal lengths of the collimated lens and the objective lens system, respectively [col. 4, line 46 to col. 5, line 67].

11. The aforementioned claim 4, recites the following elements, inter alia, disclosed in Kikuchi:

the light source is a laser diode [col. 6, line 61].

12. The aforementioned claim 5, recites the following elements, inter alia, disclosed in Kikuchi:

the focus control unit detects focus errors by a detection method that is selected from beam size detection, astigmatism detection, knife-edge detection, and hologram-Foucault detection [col. 6, lines 5-16].

13. The aforementioned claim 6, recites the following elements, inter alia, disclosed in Nakano:

an air gap control unit [inherently present in a near-field lens system when gap is controlled] for maintaining a distance between the solid immersion lens and the optical recording medium [col. 4, line 36 to col. 5, line 15].

14. As to claims 7-8, they are rejected for the similar reasons set forth in the rejection of claims 1-2 respectively, above.

15. The aforementioned claim 9, recites the following elements, inter alia, disclosed in Kikuchi:

$L = (s1/s2)^2 \times (\Delta d/n)$ where Δd represents the deviation in the optical thickness of the substrate of the optical recording medium; n represents a refractive index of the substrate; s1 represents an optical path length between the light source and the solid immersion lens; and s2 represents an optical path length between the solid immersion lens and the optical recording medium [col. 4, line 46 to col. 5, line 67].

16. As to claims 10-12, they are system claims corresponding to claims 10-12 respectively and they are therefore rejected for the similar reasons set forth in the rejection of claims 10-12 respectively, above.

17. The aforementioned claim 13, recites the following elements, inter alia, disclosed in Corle:

a coupling lens [fig. 3, unit 27], placed between the light source [fig. 3, unit 21] and the beam-splitter [fig. 3, unit 22], enabling optical power of the objective lens system to be distributed, wherein the position adjustment unit is connected to the coupling lens [col. 2, line 46 to col. 3, line 66].

18. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new grounds of rejection.

Other prior art cited

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Ichimura et al. (US. Patent 6097688)
b. Novotny et al. (US. Patent 6577575)
c. McDonald (US. patent 5995292).

20. Applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Contact information

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2600) where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bill Korzuch, can be reached on (571) 272-7589.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.

/Gautam R. Patel/

Primary Patent Examiner,
Art Unit 2627

April 3, 2008